# INPLASY PROTOCOL

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## Augmentative and Alternative Communication (AAC) Interventions that Promote Labeling, Commenting, and Telling: A Systematic Review Protocol

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**Review question / Objective:** The aim of this systematic review is to identify and describe the augmentative and alternative communication (AAC) interventions that improve the labeling, commenting, and telling skills of children with communication disabilities. To that end, the following questions will be addressed: What is the quality and quantity of research investigating AAC interventions to promote labeling, commenting, and telling skills of children with communication disabilities? Which (if any) AAC interventions have sufficient empirical evidence to support their recommendation in practice for teaching children with communication disabilities labeling, commenting, and telling skills?

**Condition being studied:** Speech is the primary modality of communication and socialization. However, not all individuals develop functional speech due to a variety of developmental or acquired disabilities, such as autism spectrum disorders (ASD), cerebral palsy (CP), or traumatic brain Injury. Although diagnoses vary, all these individuals share the condition of being unable to meet all the communication needs that others without disabilities typically meet through speech. Such Individuals are typically described as having complex communication needs or a severe communication disorder, or as requiring augmentative and alternative communication (Von Tetzchner & Basil, 2011).

## INTRODUCTION

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telling skills of children with communication disabilities. To that end, the following questions will be addressed: What is the quality and quantity of research investigating AAC interventions to promote labeling, commenting, and telling skills of children with communication disabilities? Which (if any) AAC interventions have sufficient empirical evidence to support their recommendation in practice for teaching children with communication disabilities labeling, commenting, and telling skills?

**Rationale:** Augmentative Alternative Communication (AAC) interventions are frequently recommended for individuals with communication disabilities, and there is a preponderance of research supporting its use (Crowe et al., 2021). Although there are several communicative functions such as requesting, telling about something, answering questions, greetings, and protesting, about two thirds of the AAC interventions examined in research have addressed requesting only (Logan et al., 2017; Sigafoos et al., 2008; Syriopoulou-Delli & Eleni, 2021). It is understandable that communication therapy begins with requesting because it has direct and immediate utility in that it can ensure the individual gets their wants and needs met. However, once requesting emerges, the other purposes of communication become necessary. Other communicative functions such as labeling, commenting, and telling about something are essential for the academic and social development of children with communication disabilities; yet, they are rarely investigated in AAC intervention research. Currently, there are reviews of AAC interventions that classify individual interventions according to the communicative functions they address (Sigafoos et al., 2008; Syriopoulou-Delli & Eleni, 2021). However, they do not describe the AAC interventions for labeling, commenting, and telling with sufficient detail or draw conclusions about such interventions independent of other communicative functions. As a result, clinicians do not have clear guidance for how to teach these critical expressive language repertoires via AAC. Therefore,

the goals of this review are to critically appraise the existing research, describe the AAC interventions for labeling, commenting, and telling, offer evidence-based recommendations for clinical practice, and provide suggestions for future research in this area.

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## METHODS

**Search strategy:** Five electronic databases were searched on 12 April 2022. The fields, search terms, Boolean operators, limiters and results are summarised in Table 1.
Table 1
Databases, Platforms Fields, Search Terms, Boolean Operators, Limiters, and Results Database Accessed through Fields, search terms and Boolean operators Limiters Results
CINAHL EBSCOhost MH ("Alternative and Augmentative Communication") AND TX ("complex communication needs" OR "limited speech" OR "little or no functional speech" OR "severe communication disability" OR "who require* AAC" OR "using AAC" OR "who use* AAC" OR "little or no intelligible speech" OR "who use* augmentative and alternative communication" OR "Who require* augmentative and alternative communication" OR "communication disorder*" OR "speech disorder* OR nonverbal") Source type: Academic journals

Age: All child, Adolescent (13-18 years), All infant
Language: English
375
Academic search complete EBSCOhost AB (Child* OR adolescent* OR toddler* or student* or learner* or preschooler* OR youth) AND TX ("complex communication needs" OR "limited speech" OR "little or no functional speech" OR "severe communication disability" OR "who require* AAC" OR "using AAC" OR "who use* AAC" OR "little or no intelligible speech" OR "who use* augmentative and alternative communication" OR "Who require* augmentative and alternative communication" OR "communication disorder*" OR "speech disorder*" OR nonverbal) AND AB ("Augmentative and alternative communication" OR AAC OR "communication board*" OR "speech generating device*" OR "voice output device*" OR "communication aid*" OR PECS OR "manual sign*" OR "key word sign*" OR "communication device*")
Source type: Academic journals
Language: English
639
PsychINFO EBSCOhost TX ("complex communication needs" OR "limited speech" OR "little or no functional speech" OR "severe communication disability" OR "who require* AAC" OR "using AAC" OR "who use* AAC" OR "little or no intelligible speech" OR "who use* augmentative and alternative communication" OR "Who require* augmentative and alternative communication OR "communication disorder*" OR "speech disorder*" OR nonverbal) AND TX ("Augmentative communication" OR AAC OR "communication board*" OR "speech generating device*" OR "voice output device*" OR "communication aid*" OR PECS OR "manual sign*" OR "key word sign*" OR "communication device*")
Sources type: Academic journals, dissertations
Books
Age: Childhood (0-12), Adolescence (13-17), Early adulthood (18-29) 502
ERIC EBSCOhost TX (Child* OR adolescent* OR toddler* or student* or learner* or preschooler* OR youth) AND TX ("complex communication needs" OR "limited speech" OR "little or no functional speech" OR "severe communication disability" OR "who require* AAC" OR "using AAC" OR "who use* AAC" OR "little or no intelligible speech" OR "who use* augmentative and alternative communication" OR "Who require* augmentative and alternative communication" OR "communication disorder*" OR "speech disorder*" OR nonverbal) AND TX ("Augmentative and alternative communication" OR AAC OR "communication board*" OR "speech generating device*" OR "voice output device*" OR "communication aid*" OR PECS OR "manual sign*" OR "key word sign*" OR "communication device*")
Source type: Academic journals, dissertations, books
Language: English 356
MEDLINE EBSCOhost MH ("communication disorders+") AND TX ("Augmentative and alternative communication" OR AAC OR "communication board*" OR "speech generating device*" OR "voice output device*" OR "communication aid*" OR PECS OR "manual sign*" OR "key word sign*" OR "communication device*")
Sources type: Academic journals,
Age: Child (0-18) 519
An ancestry search of the reference list of all included articles will also be conducted, as well as a forward citation search.

Participant or population: AAC users with communication disabilities who are 18 years old or younger, with no exclusions based on ethnicity, age, or type of disability.

Intervention: Interventions, teaching procedures, and strategies involving aided or unaided AAC.

Comparator: Each AAC intervention will be compared to the others.

Study designs to be included: Causal inference intervention studies—single case experimental designs and group designs—will be included in the review; however, case studies, single case A-B designs, and

group design studies without control groups will be excluded because they cannot control sufficiently for threats to internal validity. Single participant studies will be included, only if they are multiple baseline across behaviors or alternating treatment designs, and their variations.

**Eligibility criteria:** For this review, studies (dissertations and peer reviewed publications) that adhere to the following criteria will be included: 1) published in 2022 or earlier; 2) written/published in English; 3) employed a quantitative, causal inference intervention design, including single case experimental designs and group designs with control groups; 4) the majority (>50%) of participants were children (18 years or younger) with communication disabilities who use AAC; 5) investigated the effect of any AAC intervention (see *); 6) outcomes were collected during an expressive language task that fulfilled the purposes of labeling, commenting, or telling about something (i.e., information sharing or tacting). *AAC interventions are defined as teaching procedures that are directly or indirectly implemented using an AAC system, which augment or provide alternative receptive and/or expressive language communication for the AAC user. For the purpose of this review, interventions such as Facilitated Communication, Rapid Prompting Method, and Spelling to Communicate (Hemsley et al., 2018; Schlosser et al., 2019) do not fit the definition of AAC intervention.The following exclusion criteria will be applied: 1) published after 2022; 2) written/published in any language other than English; 3) qualitative, correlational, or descriptive studies, including single participant studies (except multiple baseline across behaviors and alternating treatment designs), case studies that do not control for threats to internal validity, and group studies without control groups; 4) more than 50% of participants were not children (18 or younger) with communication disabilities who use AAC; 5) interventions that did not involve AAC; 6) outcomes classified as requesting, greetings, answering questions, and protesting, or if the

communicative function of the outcomes measured cannot be determined (e.g., initiations, mean length of utterance).

**Information sources:** The following electronic databases were searched: CINAHL, MEDLINE, PsychINFO, Academic Search Complete, and ERIC. All databases were accessed via Ebscohost.

**Main outcome(s):** In this review, we will include measures collected during expressive information transfer tasks (e.g., labelling, commenting, telling about), even if a pragmatic or functional outcome was not the primary target (e.g., length of utterance, grammar, syntax). However, it will be necessary for the function of communication to be discernible in the description of the data collection or measurement task. For example, outcomes such as number of initiations, spontaneity or intelligibility of communication may not reveal the communicative function and would, therefore, be excluded from our review.

**Data management:** For this review, the Covidence online systematic review platform and data management tool will be used to organize the data collection and article extraction. Three PhD level investigators, experts in the topic and methodology, will serve as reviewers, dividing the task into three equal parts. Each identified record will first be independently reviewed by two reviewers on title and abstract level for in- and exclusion. We will monitor and document percent agreement. Disagreements will be discussed among the two reviewers with mediation of the third reviewer where necessary to reach consensus. Studies included at the abstract and title level will then again be independently reviewed for in- and exclusion on full text level by two reviewers, and a record kept of the percent agreement. Once again, disagreements will be discussed among the two reviewers with mediation of the third reviewer where necessary to reach consensus. Reasons for exclusion of studies at the full text level will be recorded for each excluded record. In addition to percent agreement between

first and second reviewers, kappa coefficients will be calculated using SPSS. A data extraction form will be created and piloted to ensure meaningful and consistent extraction of relevant descriptive as well as intervention and outcome data from included studies. We plan to extract the following descriptive information from each record: authors, date, aims, design, participants, study setting (including geographical location). The following information about the interventions is planned to be extracted: arrangement, schedule (and number) of intervention sessions, length of sessions, activity/context, materials, antecedents, prompts, target behaviors, consequences, and communicative function. Data from each included record will be independently extracted by at least two investigators. Percent agreement will be monitored and documented. Disagreements will be discussed among the two reviewers with mediation of the third reviewer where necessary to reach consensus.

Quality assessment / Risk of bias analysis: The assessment of methodological quality will be completed using two approaches. First, the quality of group studies will be judged using Cochrane's GRADE risk of bias rating system (Schunemann et al., 2013) that assesses four types of bias: selection, performance, detection, and other. Because we expect the majority of studies related to our research question will feature single case research designs, we will use the Single Case Design Risk of Bias (SCD RoB) tool (Reichow et al., 2018) to examine the quality of those studies. The SCD RoB tool was based on the Cochrane GRADE system and includes the same bias dimensions, which is important so that we can combine single case and group design studies in the review. Each domain, including sequence generation, participant selection, blinding of participants and personnel, procedural fidelity, blinding of assessors, selective outcome reporting, dependent variable reliability, and data sampling, will be rated using the Cochrane designations of low risk of bias, unclear risk of bias, and high risk of bias. The second approach to assessing the quality

of studies will involve using the What Works Clearinghouse (WWC) Quality Standards for group and single case design studies. Group designs will be assessed for randomization, baseline equivalence, attrition and differential attrition, and measurement reliability. Each single case design study will be examined for the manipulation of the independent variable, dependent measure reliability, and the number of demonstrations. Using the WWC Procedures and Standards Handbook 5.0 (2022), we will assign a quality classification of meets standards, meets standards with reservation, or does not meet standards to each included study. Studies will be assessed by two independent reviewers using each of these two tools. Percent agreement will be monitored and documented. Disagreements will be discussed among the two reviewers with mediation of the third reviewer where necessary to reach consensus.

Strategy of data synthesis: We plan to synthesize the data from this review in three ways. First, a table will be created to present the risk of bias ratings for each domain. We will create a corresponding chart (colored in green, yellow, and red) to represent the risk of bias for the entire collection of included articles so that an overall assessment of the evidence can be made. Second, a table with the individual ratings of the WWC items will be created to display the individual studies and synthesize the group and single case design studies. Because we do not expect to find more than a few studies applying the same intervention, it would be premature to attempt a meta-analysis. Instead, we will describe the AAC interventions in detail to explore any patterns within the interventions that may be appropriately recommended for practice. This information will be presented in a table so that the dimensions of AAC interventions can be compared across studies, alongside their effectiveness. For example, we plan to extract the following information about the interventions from each article: arrangement, schedule (and number) of intervention sessions, length of

sessions, activity/context, materials, antecedents, prompts, target behaviors, consequences, and communicative function. Additionally, we will include any statistical or visual effect size estimates in this third table.

**Subgroup analysis:** NA.

**Sensitivity analysis:** NA.

**Language:** English.

**Country(ies) involved:** South Africa, United States of America.

**Keywords:** Augmentative and alternative communication; AAC intervention; communicative functions; single case designs.

**Dissemination plans:** Following the completion of this review, we plan to submit a manuscript to the international journal Augmentative and Alternative Communication.

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